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EXAMINER

SINGH, RAMNANDAN P

ART UNIT

PAPER NUMBER

2614

DATE MAILED: 10/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/072,833

Applicant(s)

NORRELL ET AL.

Examiner

Ramnandan Singh

Art Unit

2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 31-43 is/are allowed.
- 6) ☒ Claim(s) 1-10, 18-26, 44-49 is/are rejected.
- 7) ☒ Claim(s) 11-17 and 27-30 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>Aug. 04, 2006</u> . | 6) <input checked="" type="checkbox"/> Other: <u>Rejection of Claims</u> .              |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed on Aug. 04, 2006 have been fully considered but they are not persuasive.

(i) Applicant's argument---"It is submitted that Mukherjee does not disclose configuring a loop extender in the DSL modem system of its purported invention" on page 17.

Examiner's response---Examiner respectfully disagrees. Mukherjee teaches configuring a loop extender in the DSL modem system using repeaters or complex impedances [Figs. 1, 3-4; col. 2, lines 10-28; col. 10, lines 41-63; col. 13, line 8 to col. 19, line 37].

(ii) Applicant's argument---"It is submitted that Mukherjee does not teach providing selectable DSL amplification or circuitry" on page 18.

Examiner's response---Examiner respectfully disagrees. Mukherjee teaches providing selectable DSL amplification or circuitry [Figs. 1, 3-4; col. 3, line 61 to col. 4, line 12; col. 4, lines 16-19; col. 5, line 24 to col. 6, line 26]. Further, Applicant is directed to the rejection of claims 1 and 18 set forth in the Office action.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 18-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Mukherjee [US 6,226,322 B1].

Regarding claim 18, Mukherjee teaches a method for improving transmission of DSL signals over a local loop shown in Figs. 1-4 [col. 10, lines 41-63], comprising the steps of:

configuring a loop extender [col. 2, lines 10-28] with:

a plurality of upstream complex impedances comprising elements, capacitor C89, resistors RIX, RI1, RI2 and RI3 wherein selecting a combination of switches S12', S23' and S3X' yields a plurality of complex impedances coupled in parallel [Figs. 1, 4, 8; col. 18, line 13 to col. 19, line 37; col. 17, line 18 to col. 18, line 12];

a plurality of downstream complex impedances comprising resistor Ri1, a variable resistor Rs1 and capacitor Cs1 wherein selecting different values of Rf1 yields a plurality of complex impedances coupled in parallel [Figs. 1, 10, 13; col. 26, line 59 to col. 28, line 15];

a plurality of upstream amplifying elements comprising amplifier 90, resistors R1, R2, R3, RX wherein selecting a combination of switches S12, S23, S3X yields a plurality of amplifying elements coupled in parallel and coupled in series with the plurality of upstream complex impedances [Figs. 1, 4, 8; col. 18, line 13 to col. 19, line 37]; and

a plurality of downstream amplifying elements comprising amplifier (111), capacitor Cf1 and a variable resistor Rf1 wherein selecting different values of the variable resistor Rf1 yields a plurality of amplifying elements coupled in parallel and coupled in series with the plurality of downstream complex impedances [Figs. 10, 13; col. 26, line 59 to col. 28, line 15].

Regarding claims 19-25, the limitations are shown above.

***Claim Rejections - 35 USC § 103***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claims 1-9 and 44-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukherjee [US 6,226,322 B1].

Regarding claim 1, Mukherjee further teaches a system for improving transmission of DSL signals over a local loop, the system comprising:

a loop extender capacitively coupled to the local loop using capacitor C89 [Fig. 8];

a plurality of upstream complex impedances comprising elements, capacitor C89, resistors RIX, RI1, RI2 and RI3 wherein selecting a combination of switches S12', S23' and S3X' yields a plurality of complex impedances coupled in parallel [Figs. 1, 4, 8; col. 18, line 13 to col. 19, line 37];

a plurality of downstream complex impedances comprising resistor Ri1, a variable resistor Rs1 and capacitor Cs1 wherein selecting different values of Rf1 yields a plurality of complex impedances coupled in parallel [Figs. 1, 10, 13; col. 26, line 59 to col. 28, line 15];

a plurality of upstream amplifying elements comprising amplifier 90, resistors R1, R2, R3, RX wherein selecting a combination of switches S12, S23, S3X yields a plurality of amplifying elements coupled in parallel and coupled in series with the plurality of upstream complex impedances [Figs. 1, 4, 8; col. 18, line 13 to col. 19, line 37]; and

a plurality of downstream amplifying elements comprising amplifier (111), capacitor Cf1 and a variable resistor Rf1 wherein selecting different values of the variable resistor Rf1 yields a plurality of amplifying elements coupled in parallel and coupled in series with the plurality of downstream complex impedances [Figs. 10, 13; col. 26, line 59 to col. 28, line 15].

Although Mukherjee teaches coupling a first upstream amplifying element (54C) in series with the plurality of upstream complex impedances (56) [Figs. 1, 4, 8], he does not teach expressly using a first switch to connect the first upstream amplifying element to the plurality of upstream complex impedances.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a switch, called a first switch, in order to selectively connect the first upstream amplifying element to the plurality of upstream complex impedances to facilitate the selection of impedances. Similarly, a second switch is applied to select one of the downstream impedances .

Regarding claims 2-6, the limitations are shown above.

Regarding claim 7-9, although Mukherjee does not teach expressly using fourth and fifth switches, it would have been obvious to a person of ordinary skill in the art, at the time of the invention, to use a switch, called a third switch, in order to select one of the upstream amplifying elements to facilitate the selection of amplifying elements to provide upstream DSL signal amplification. Similarly, a fourth switch is applied to select one of the downstream amplifying elements.

Regarding claim 44, Mukherjee teaches a method for improving transmission of DSL signals over a local loop, comprising the steps of:

transmitting control signals and DSL signals over the local loop [Fig. 1; col. 3, line 61 to col. 4, line 12; col. 5, line 12 to col. 6, line 9; col. 8, lines 18-65];

providing DSL signal amplification via selectable line termination and equalization (SLTE) DSL amplification circuitry coupled to the local loop [Figs. 2-7; col. 23, line 18 to col. 24, line 35; Fig. 12; col. 26, lines 33-58];

receiving the control signals via a control unit (digital transceiver 13) coupled to the local loop and processing the control signals [Figs. 1-3; col. 9, lines 26-67];

selecting SLTE DSL amplification circuitry switch states in accordance with the processed control signals; selecting SLTE DSL amplification circuitry switch states in accordance with the processed sampled DSL signals to improve SLTE DSL amplification circuitry performance; uncoupling SLTE DSL amplification circuitry [Fig. 5] from the local loop in accordance with the processed control signals [Figs. 5-6; col. 11, line 19 to col. 12, line 45; col. 23, lines 18-39 ].

Mukherjee does not teach expressly sampling digital signals within DSL amplification circuitry.

Since Mukherjee teaches the system where sampling is required [ Figs. 4, 5, 10, 16; col. 12, lines 23-67; col. 29, lines 13-59], it would have been obvious to a person of ordinary skill in the art to do sampling of DSL signals within the SLTE DSL amplification circuitry and processing the sampled DSL signals in order to reduce the memory requirement for processing.



Claim 45 is essentially similar to claim 44 and is rejected for the reasons stated above.

6. Claims 10, 26, 46-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukherjee as applied to claims 9 and 25 above.

Regarding claim 10, although Mukherjee teaches the system, wherein the selection of one of the plurality of amplifying elements is based upon the particular characteristics of a subscriber loop [col. 19, lines 27-34], it would have been obvious to a person of ordinary skill in the art to use the loop length as one of the characteristics of the loop to select one of the amplifying elements to improve the implementation of impedance matching [Mukherjee: col. 19, lines 35-37].

Claim 26 is essentially similar to claim 10 and is rejected for the reasons stated above.

Claims 46-49 are rejected for the similar reasons stated above.

***Allowable Subject Matter***

7. Claims 31-43 are allowable.

8. Claims 11-17, 27-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571) 272-7547. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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